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Observations On Certain Virus Diseases of Potatoes in Florida and Maine¹

L. O. GRATZ² and E. S. SCHULTZ³

INTRODUCTION

Relative Losses—

The losses caused by different virus diseases of Irish potatoes are about as great in Florida as they are in the Spaulding Rose No. 4 variety in Maine. The percentages are relatively low in both states. As stated previously (8) (9), the acreage in the Florida potato belt consists of about 19,000 acres. The Spaulding Rose No. 4 has been practically the only variety planted in this area, and during the past several years almost the entire acreage has been planted from certified seed stock imported from Aroostook County, Maine.

Such exclusive use of high grade stock explains in part the small losses from virus diseases in Florida. Since the Spaulding Rose No. 4 variety (called Kings in the middle West⁴) is more resistant to mild mosaic than either the Bliss Triumph or the Green Mountain variety (10) it is evident that, commercially, the Florida area has smaller total losses because of this disease than that in Maine where the relative acreage of other varieties is so much greater than that of the Spaulding Rose No. 4.

¹Conducted as a cooperative project between the Bureau of Plant Industry, U. S. Department of Agriculture, and the Florida Agricultural Experiment Station.

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⁴For proper classification see: Stuart, William. The Potato, its culture, uses, history and classification. 518 pp. J. B. Lippencott Company. Philadelphia and London.

Control Measures and Results—

In Aroostook County, Maine, persistent efforts have been made in the last decade toward the control of virus diseases. The discovery of the methods of dissemination of these diseases (1) (2) (3) (11) (12), even though the actual causes have not been determined, followed by the unhesitating adoption of recommended preventive measures by the Division of Plant Industry of the Maine State Department of Agriculture in their inspection service⁵, have brought about results of great value not only to the potato industry of Maine but to the industry in every other section which obtains seed stock from this northern area. Obviously, the same has resulted from every other seed-potato-producing section where similar measures are in use, but had such methods not been adopted several years ago the losses from virus diseases would indeed be considerably greater than at present.

The many sad experiences of the southern buyers and growers as a result of planting poor seed potatoes have created a demand for only the best seed stock. This demand together with the large effort of the certification department has placed the Spaulding Rose No. 4 seed potato in Maine on a rather high plane. It is this demand for good seed potatoes which led to the planting of practically nothing but state certified stock in the Florida potato belt. Furthermore, it resulted in the distribution of foundation stock to various Maine seed potato growers until at present the origin of many Spaulding Rose No. 4 lots in Aroostook County can be traced to about two growers. This in itself is of importance only if proper care has been taken during the intervening years and means nothing if proper isolation and roguing methods are not followed. However, the general result of this distribution of foundation stock and the effort to control these virus diseases has been to eliminate the poor fields so that today relatively few are disqualified for certification, while a number of years ago very few fields of this variety could have met the present day certification requirements.

Obviously, the quality of the seed stock is just what the grower makes it. At times the demand for cheap seed potatoes and the response to produce such cheap stock is not conducive to the best interests of the growers in either section. As a rule, the price differential is not large enough between common potatoes and seed stock to make the growing of disease-free seed potatoes very attractive, yet in spite of this a great improvement has been made during the last few years.

⁵For certification rules and regulations for Maine seed potatoes see: Gratz, L. O. Irish potato disease investigations, 1924-25. Florida Agr. Exp. Sta. Bul. 176:4-5. 1925.

OBSERVATIONS ON SPECIFIC DISEASES

Mosaic—

It has frequently been claimed that the percentages of mosaic are greater in the South than in the North. These statements usually are not accompanied by conclusive experimental evidence. Just why this difference should exist has never been satisfactorily explained. Different lots of different potato varieties grown in Maine and having known disease readings have repeatedly been divided by the writers and one portion planted in Maine and the other in Florida. These sample lots were carefully inspected in both sections and similar mosaic counts were obtained for all varieties tested. High percentages of mosaic, usually of the "mild" type⁶, have been obtained at times in Florida and in Maine, especially on Green Mountains and Bliss Triumphs. However, the high percentages of this disease in the South were not greater than the percentages in the North and they were apparently not greater than those which occurred in the parent stock plus the dissemination which took place in Maine during the previous season. The percentages of mosaic developing in Spauldings, as stated before, usually are comparatively low and about the same in Florida and in Maine.

Goss and Peltier (4) (7), working with the Bliss Triumph variety, demonstrated that certain air temperatures greatly affect the symptoms of mosaic, and showed that the disease is masked at about 70° F. (21° C.) or over. Tompkins (13), working with the same variety, likewise has demonstrated that intermittent high air temperatures are important in causing a masking of crinkle mosaic (10) symptoms under greenhouse conditions. By correlating these conditions with actual field temperatures he has shown how these results may apply in actual practice. In general, this application has been confirmed by the field observations of the writers in the two sections under discussion. It has frequently been observed that under certain conditions of warm weather the symptoms of mosaic gradually disappear both in Florida and in Maine. Accurate mosaic readings in the Hastings (Florida) area can usually be obtained only until about the middle of March or the first of April, or about until the tenth or twelfth week after the average planting date. The temperature records (Figures 1-3)⁷ indicate that this is just a little after the time when the maximal daily temperatures exceed 75° F. (24° C.). Tompkins demonstrated that this is about the critical tempera-

⁶Referring not to severity but to type of disease.

⁷See also "Literature Cited" No. 9.

ture for the masking of the symptoms of that type of mosaic. The actual week in the season when this critical temperature is reached varies somewhat from the graphic representation shown by Tompkins. Probably this is because he based his

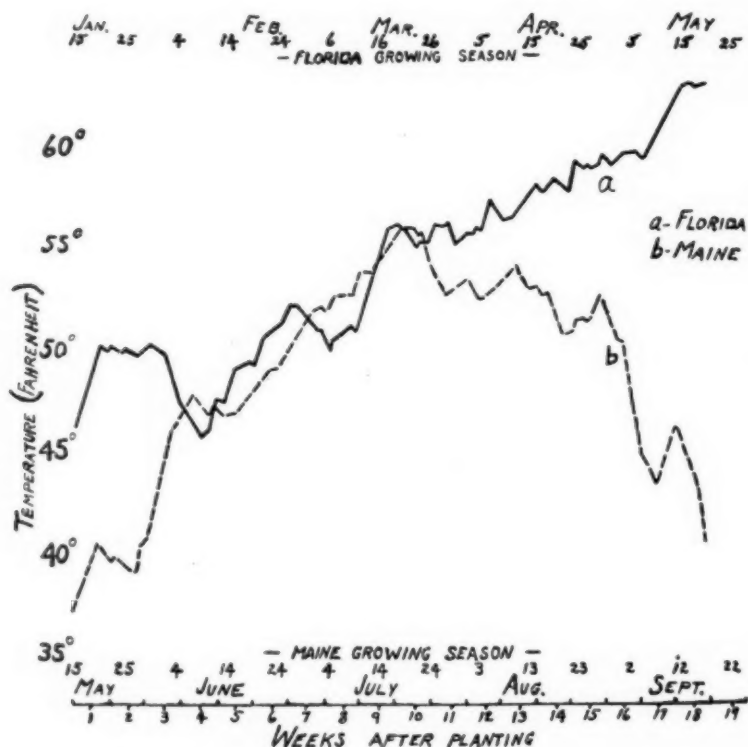


Fig. 1. Daily average maximal temperatures during the ten-year periods 1917-1926 and 1916-1926¹ for the potato-growing seasons at Federal Point, Florida, and Aroostook Farm, Presque Isle, Maine, respectively.

¹Data for 1918 missing.

comparison on temperatures obtained in St. Augustine, on the east coast of Florida, while the potato section is 15 to 20 miles inland where at times are found temperatures somewhat different from those obtained on the coast. Another and more important factor which causes a slight difference is that the approximate average planting date for the Florida area is January 15 rather than December 27, as given in the above mentioned paper (13). The actual masking of mosaic symp-

toms usually does not take place in Aroostook County, Maine until about the middle to the latter part of July. This is about the eighth or tenth week after the average planting date, rather than the fifth as suggested by Tompkins, and

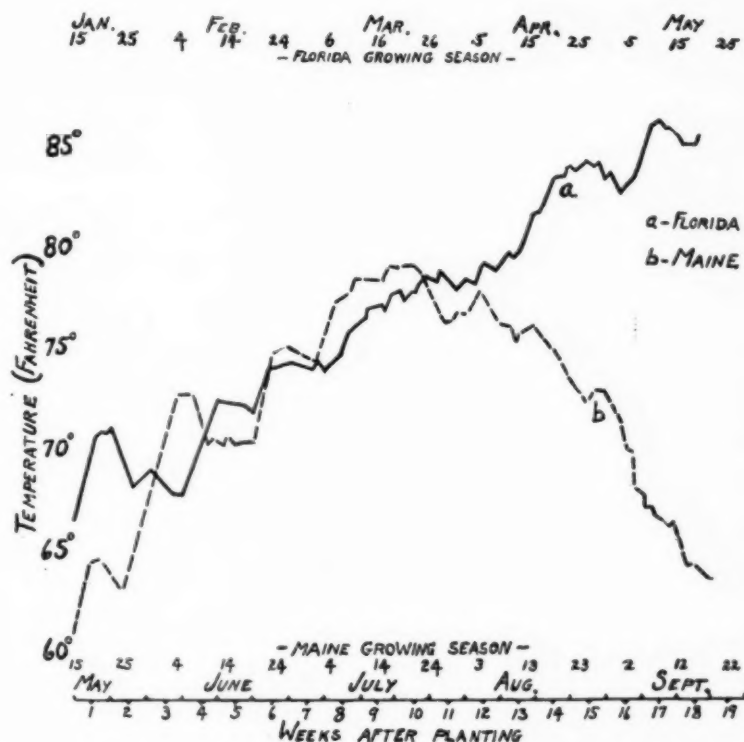


Fig. 2. Daily average minimal temperatures during the ten-year periods 1917-1926 and 1916-1926¹ for the potato-growing seasons at Federal Point, Florida, and Aroostook Farm, Presque Isle, Maine, respectively.

¹Data for 1918 missing.

even then masking is not always complete. It is possible that this variation between the data given for the northern section and what actually occurs there is caused by the difference between temperatures at Orono, where Tompkins' records were taken, and those obtaining in the center of the potato-producing section, about 175 miles farther North. Also, the average planting date for Aroostook County, Maine is about May 15 instead of May 29, as reported by Tompkins.

Other than the temperature effects on masking, it is not considered that the same type of mosaic affects the plants very differently in the two sections. Numerous direct comparisons, made in 1926 in Florida and in Maine, similar to those described below for the studies on spindle tuber, indicate that mild mosaic causes heavy reductions in yield in both

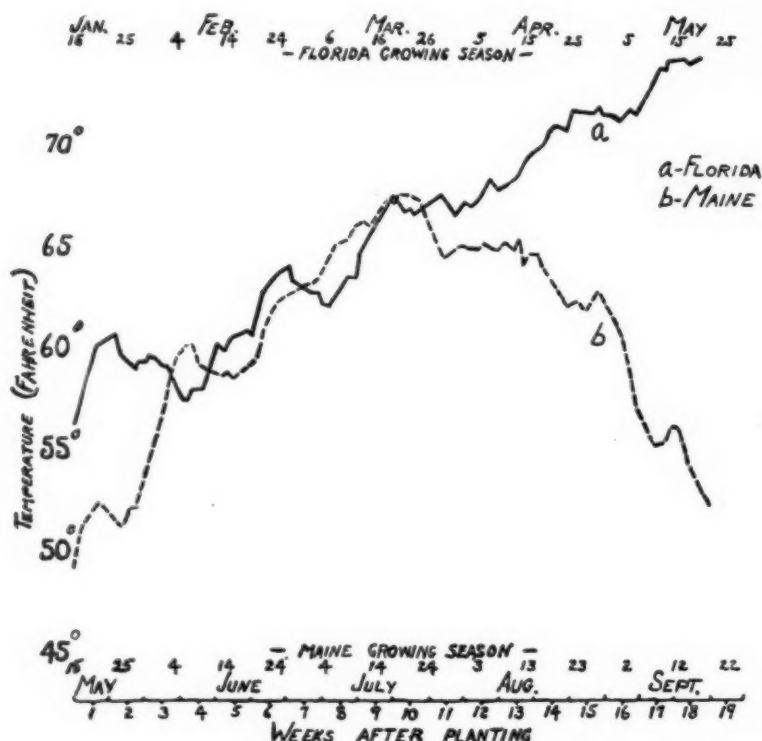


Fig. 3. Daily average mean temperatures during the ten-year periods 1917-1926 and 1916-1926¹ for the potato-growing seasons at Federal Point, Florida, and Aroostook Farm, Presque Isle, Maine, respectively.

¹Data for 1918 missing.

sections (table 1.). The tubers used in these trials consisted of two lots. One lot contained a relatively small and the other a relatively large percentage of the disease. The manner of making the comparisons was identical in both sections. The data (table 1) indicate a slightly smaller percentage of primes, and a larger percentage of seconds and cull tubers where high percentages of mild mosaic prevailed.

TABLE 1. Effect of mild mosaic on yield in Bliss Triumph potatoes in Florida and Maine in 1926.

Sample	Percentage mosaic observed	AROOSTOOK FARM Presque Isle, Maine			HASTINGS LABORATORY Hastings, Florida				
		No. of repl.	Calc. bushels per acre			No. of repl.	Calc. bushels per acre		
			Primes	Seconds	Culls		Primes	Seconds	Culls
1	11	8 8	190.0	40.9	8.5	6 6	97.1	41.3	9.1
2	100		145.7	38.7	8.2		58.7	34.7	8.4
Decrease	bushels per cent odds		44.3 23.3 9999:1	2.2 5.4 32:1	0.3 3.5 0		38.4 39.5 302:1	6.6 16.0 34:1	0.7 7.7 0
Per cent of total yield—									
	Sample 1		79.4	17.1	3.5		65.8	28.0	6.2
	Sample 2		75.6	20.1	4.3		57.6	34.1	8.3

Leaf Roll—

Leaf roll, very serious in some potato sections, has not recently caused great losses in the Spaulding Rose No. 4 variety in either Florida or Maine. The percentages of plants affected are usually very low, and frequently not more than a trace is observed in this variety.

Spindle Tuber—

The spindle tuber disease has been causing the Spaulding growers more concern than all of the other virus diseases combined. For many years the tendency of potatoes to "grow long" has been observed both by the grower and the investigator, but it was not until about 10 years ago that the infectious nature of this trouble was demonstrated (11). At that time it was not difficult to find fields in Maine which contained 25 to 90 per cent of the plants manifesting symptoms of this disease. By discarding such diseased stock, planting only that which was most disease-free, and by following a careful program of roguing the disease has been reduced to the point where only a few fields can now be found where 5 per cent of the plants exhibit symptoms of spindle tuber. Usually, the field readings of the inspectors show a lower percentage.

Small sample lots selected from spindle tuber hills in Maine were shipped to Florida and planted both in 1924 and 1925. Conclusive data were not then obtained, but it was at once apparent that the disease caused a heavy reduction in yield. In order to make further studies on symptoms, and primarily to obtain information on comparative reductions in yield in the two areas, several bushels of tubers from spindle tuber hills and several from healthy plants of the same strain of the Spaulding Rose No. 4 variety were selected at time of harvest in Maine, in 1925, 1926, and 1927, and placed in commercial storage in burlap bags. Each year half of each sample was included in a commercial car lot, and shipped to Florida in January and planted, while the other portion was planted in Maine. Throughout this experiment both the spindle tuber and healthy lots were stored and shipped under identical conditions and planted in parallel rows in the same plot.

When the samples arrived in Florida the tubers of the healthy lots manifested no decay while over half of the tubers in the spindle tuber lot were badly affected with alternaria lesions and fusarium dry rot. This same condition existed in the Florida shipments every season. Furthermore, more dry rot was usually observed in the spindle tuber samples than in the healthy lots when taken from storage in Maine, but the difference was not as great as that observed in the lots

shipped to Florida. Apparently, this tendency to decay was accentuated by the higher temperatures to which the tubers were subjected while in transit. Only sound tubers were planted, and those showing any decay were discarded. The amount of tubers discarded was considerable, especially if planting in Florida was delayed for some time, as the tubers showing the spindle tuber disease decayed very rapidly. Even with this precaution the stands obtained in Florida were very poor in the rows planted from spindle tuber stock, while in Maine they were almost as good as those from the healthy lots. An examination of the seed pieces each year revealed that in Florida all of the seed pieces in the spindle tuber stock manifested a semi-soft, brownish rot within 10 days to two weeks after planting. Frequently this decay was so rapid that the seed piece was decayed completely before the plant could establish a root system. Even when less severe, although the plant was apparently growing, no sound seed pieces could be found in any of the spindle tuber hills within three weeks after planting. In the adjoining healthy samples with which the diseased lots were compared it was usually impossible to find any seed pieces which were not perfectly sound. In Maine where the other portion of these samples was planted no such extreme differences were observed.

This behavior in the South of these spindle tuber samples of Spaulding Rose No. 4 potatoes is in direct contrast with that of spindle tuber lots of Bliss Triumphs in Nebraska, as reported by Goss (5) (6). The spindle tuber seed pieces of this variety remained sound until digging under Nebraska conditions and often sprouting was delayed from a few weeks to several months. That this behavior is a varietal response is indicated by parallel observations made in Florida in 1929 on both healthy and 100 per cent spindle tuber Maine samples of different varieties. These lots were held under identical conditions of storage and transportation, and planted side by side in the same manner. The results given in the table on the next page were obtained.

Further investigations are necessary to demonstrate conclusively this point, and in drawing conclusions it should be remembered that these figures represent the trials of one year only for the last two varieties mentioned.

In Florida, the spindle tuber plants never attained a height greater than from one-third to one-half that of normal plants, while in Maine the diseased plants were about two-thirds to three-fourths as large as those from the healthy stock. Other than this difference in size the foliage symptoms were practically the same in both sections.

Throughout this series of experiments the diseased and healthy lots were planted in alternate rows from 50 to 125 feet long and each comparison was repeated from 6 to 10 times. This method permitted of direct pairing and the significance of the results was calculated by means of Students' Method and Love's Modification of this method⁸. Table 2 gives the results obtained for the different trials, with the calculated odds. Results with odds of approximately 30:1 were considered not significant.

VARIETY	Percentage seed piece decay 50 days after planting*	
	Healthy stock	Spindle tuber stock
Spaulding Rose No. 4.....	0	100
Green Mountain	10	45
Bliss Triumph	10	15

*This includes any decay on the seed pieces whether severe or slight.

These data indicate a large decrease in yield in the spindle tuber samples with the extreme decrease occurring in Florida. Since the symptoms of the disease both in the tubers and the foliage are much more pronounced under rather high temperatures (5) (6) (14) (15), it was reasonable to expect large decreases in Florida, where the potatoes mature in the warmer portion of the season (see Figures 1-3). The actual differences obtained, however, were much greater than one would ordinarily expect. It should be observed that the actual loss resulted not only in a decrease in total yield but in the percentage of prime tubers produced. This is of great importance, especially where all the potatoes are mechanically graded, and where there is practically no sale for anything smaller than primes, as graded according to the standards of the U. S. Department of Agriculture.

⁸Love, H. H. A modification of Student's table for use in interpreting experimental results. Jour. Amer. Soc. Agron. 16:68-73. 1924.

CONCLUSIONS

This paper describes the situation which would exist were it not for the continuous endeavor to ascertain the actual causes of virus diseases and their control, the constant watchfulness of the inspection bureaus, the careful distribution of disease-free stock, and the careful roguing on the part of the grower of seed potatoes.

The reason for the demand of the southern grower for the best certified seed stock is evident, as he has recognized that such stock produced less "long" potatoes even though he had no comparative experimental evidence to guide him.

These data emphasize the need of the most careful selection and buying on the part of the southern grower or his representative, paying strict attention to inspection records, and further, the need of a conscientious effort of the grower of seed stock to plant only the best, and to keep it disease-free.

SUMMARY

Observations in the Florida and Maine potato sections indicate that the symptoms and yield reductions of the same type of mosaic are similar in both places.

Very little leaf roll has been observed in the Spaulding Rose No. 4 variety in the two sections for the past five years.

Spindle tuber is much more destructive in the Spaulding Rose No. 4 variety in the South than in the North, according to the data here presented. Observations during three years disclosed that spindle tuber caused from 78 to 95 per cent reduction in the yield of prime tubers in Florida and only 26 to 50 per cent reduction in Maine.

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TABLE 2. Effect of spindle tuber on yields in Spaulding Rose No. 4 potatoes in Florida and Maine in 1926, 1927, and 1928.

Seed Stock	AROOSTOOK FARM Presque Isle, Maine					HASTINGS LABORATORY Hastings, Florida				
	Calc. bushels per acre					Calc. bushels per acre				
	No. of Repl.	Stand	Primes	Seconds	Culls	No. of Repl.	Stand	Primes	Seconds	Culls
Healthy	6	98.6	1926	13.6	3.9	6	100.0	1926	41.0	10.2
Spindle tuber	6	74.7	325.7	8.7	1.5	6	54.0	59.9	9.9	6.9
Decrease			174.2					2.8		
bushels			151.5	4.9	2.4			57.1	31.1	3.3
per cent			46.5	36.0	61.5		56.0	95.4	75.8	32.3
odds		23.9	9999:1	112:1	194:1			9999:1	9999:1	9999:1
Per cent of total yield—										
Healthy			94.9	3.9	1.2			53.9	36.9	9.2
Spindle tuber			94.5	4.7	0.8			14.3	50.5	35.2
Healthy	8	93.0	1927	15.6	4.6			1927	45.1	Weight not ob- tained
Spindle tuber	8	90.0	405.3	20.9	4.3	6	83.3	93.0	27.8	
			297.4			6	35.3	8.0		

Decrease bushels	107.9	—5.3	0.3	48.0	85.0	17.3	Weight not ob- tained
per cent	26.6	—34.0	6.5		91.4	38.4	
odds	9999:1	11.8:1	1.83:1		1249:1	1999:1	
Per cent of total yield—							
Healthy	95.3	3.7	1.0		67.3	32.7	
Spindle tuber	92.2	6.5	1.3		22.3	77.7	
	1928				1928		
Healthy	358.5	21.8	3.9	99.8	87.2	19.9	
Spindle tuber	179.4	32.7	7.0	64.2	19.1	8.6	
Decrease bushels	179.1	—10.9	—3.1		68.1	11.3	
per cent	50.0	—50.0	—79.5	35.6	78.1	56.8	
odds	9999:1	262:1	103:1		* M :1	4999:1	
Per cent of total yield—							
Healthy	93.3	5.7	1.0		81.4	18.6	
Spindle tuber	87.9	14.9	3.2		68.9	31.1	

*Million or more to one.

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The Motor Truck and Potato Marketing

By C. W. WAID,

Ohio State Department of Agriculture, Columbus.

The motor truck is becoming of increasing importance in the marketing of the annual potato crop. It has only been in recent years that general recognition has been given to this problem.

The writer recalls that, at a meeting held in Buffalo less than ten years ago at which representatives were present from most of the commercial potato growing states east of the Mississippi, the motor truck was not given much consideration as a factor in the hauling of potatoes to market. In fact, much of the development and most of the interest in this problem as it relates to the handling of potatoes has come about in the last three or four years.

The writer has on several occasions called attention to the fact

that the carlot reports of the movement of the potato crop to market which are issued by the U. S. Department of Agriculture at frequent intervals do not tell the whole story. These reports are for the most part based on carlot movements although during the last few years the movement by motor trucks has been included whenever and wherever the information was available. At best, these reports include only a small part of the crop which finds its way to market via motor trucks.

As a good illustration of the extent of the motor truck business in some states the annual production of potatoes in Ohio is from ten to twelve million bushels or from sixteen to twenty thousand cars of six hundred bushels each if all were to be hauled to market in carloads. As a matter of record, there is usually considerably less than five hundred cars of potatoes which originate in Ohio shipped to market in carloads. The balance which reach the market are hauled by motor truck. It can be seen from this that a very small percentage of the Ohio potato crop, which is from one-third to one-fourth as large as that of the heaviest potato producing states, is loaded into cars for shipments.

Similar figures can be given for most of the potato producing states in the northeastern part of the United States.

It is not only a question of volume so handled but of variation in this volume from time to time and place to place. In localities where the owners do their own hauling and marketing there is not so much trouble along this line. However, in many sections of the country the growers sell their potatoes to motor truck operators who haul to whatever market appeals to them as being the most promising at the time. There is no method of regulating the movement of this character and, as a result, it is very irregular and uncertain.

Sometimes, largely as a result of the use of motor trucks, one market will be oversupplied while another or others may be undersupplied. The lack of information as to the volume of potatoes which has or will reach a certain market at a given period via motor trucks makes it impossible for the distant shipper to correctly size up the market situation on that particular market and as a result irregular supplies arrive from a distance. In fact, the uncertainty of the movement of potatoes via motor trucks is very largely responsible for a more or less chaotic condition in the potato market in many places.

Another serious situation which is a direct result of the use of motor trucks is the relatively large volume of ungraded potatoes which are found on many markets and which are a menace to any market. Most motor truck operators are more interested in a quick sale at a profit than in building up a reputation for good quality potatoes. They either do not realize or do not care what effect the selling of ungraded potatoes has on the consumption of the crop.

In this day and age, when city consumers have the money to buy what they want or prefer in the way of food products, it is easy to shift quickly from one thing to another. The chief consideration which will keep the consumer in line is satisfaction with the produce purchased. No consumer will be pleased with a purchase of potatoes no matter how small which is so poorly graded that there is of necessity a large percentage of waste in their preparation for use.

Everyone interested in the movement of potatoes to market should encourage more careful grading and the securing of more accurate and complete information as to the movement of the crop.

The Ohio Division of Markets in cooperation with the U. S. Department of Agriculture has been securing records of not only carlot arrivals and their source of origin but of truckload arrivals and their source as to county and state. The latter information has been secured for nearly two years and the carlot arrivals for a much longer period. We are glad to note that an effort is being made in many places to secure information relative to the movement of potatoes, as well as other crops, to market via motor trucks. We believe that such information must be made available for all large markets if we are to avoid the frequent irregularities in the supplies of potatoes on many city markets.

There is need of a very careful study of the entire motor truck problem as it relates to the marketing of potatoes and other perishable or semi-perishable products. No one can predict to a certainty at this time as to what the future development of the motor truck will be but it is safe to say that this form of transporting perishable food products to market has great possibilities but that there is need for careful guidance to the entire movement.

Crop and Market News

JUNE POTATO SUPPLIES LIBERAL

(Contribution from Bureau of Agricultural Economics)

Movement of new potatoes during June was quite heavy, sometimes averaging between 750 and 800 cars daily, in addition to fairly liberal supplies of old stock from Maine. Because of light yields, Florida growers were rather discouraged over the outcome of their 1930 season, although returns per barrel were satisfactory. It is possible that acreage may be reduced for next year.

Atlantic Seaboard States, from Georgia to Virginia, were most active in June and had shipped considerably larger quan-

ties than to the same time last season. The South Carolina crop was cleaning up, and North Carolina was taking the lead by mid-June, with Virginia coming along in moderate volume. Virginia will be most active by July. Movement from the Gulf States,—chiefly sacked Bliss Triumph potatoes,—was about finished; Arkansas and Oklahoma had become very active, and the Missouri and Kansas crops were soon expected to start to market. Drought affected the crop in some eastern sections, although timely rains prevented what might have been a serious loss. Growing conditions in the Middle West have been more favorable.

The June report on condition of commercial early potatoes was lower than that of the month before and showed an average of 79% for 18 States, which was still three points higher than a year ago and just about equal to the 10-year average figure. Best condition was reported for the crops in New Jersey, Kentucky, Oklahoma, Kansas, Missouri, Nebraska and California. Condition averaging only 73% of normal was indicated for North Carolina and Virginia.

Production in nine early States, outside of Florida and the lower valley of Texas, was forecast at 20,601,000 bushels, or only 760,000 less than last season. States from Texas around the Gulf of Georgia had larger crops than in 1929. South Carolina had only a slightly heavier crop than last year, while North Carolina and Virginia appear to be short. Virginia may fall one-sixth, or 2,000,000 bushels below its 1929 production. That state expects 10,000,000 bushels. California will have more potatoes than last season.

Indicated production in the second-early States, from Maryland and New Jersey across to Kansas and Nebraska, is 12,548,000 bushels, compared with 10,964,000 in 1929. Total acreage and probable yield per acre is greater than that of last year. All of these nine States, except Maryland and Tennessee, look for larger crops. Sharpest increases are indicated for Kansas, Missouri, Oklahoma and New Jersey. A commercial early crop of about 5,460,000 bushels may be harvested in New Jersey, and Kansas expects more than 2,230,000 bushels. Oklahoma, which was most active during early June, looked for a total 1,240,000, but Maryland may have slightly less than 1,200,000 bushels.

Prices had tended slightly downward in the East, but were holding rather firmly in the Middle West about June 10. Greater strength farther west was largely a result of the decreasing supplies of Southern Triumphs. Eastern potatoes were getting a wide distribution. Cobblers advanced slightly in the San Antonio section of Texas to an f. o. b. range of \$2.40-\$2.50 per 100 pounds, and the last report on Bliss Triumphs from Sugarland district was \$3 per sack. Best Cob-

blers had declined at North Carolina shipping points as low as \$4.40 per barrel but then strengthened to \$4.75-\$5, with very little demand for No. 2 stock. Early reports from Oklahoma showed 100-pound sacks of Bliss Triumphs returning \$2.50 cash. City markets ranged \$4.75-\$6 per barrel of eastern Cobblers, but were firm to higher on southern Triumphs at \$3.10-\$4 per sack. New Orleans quoted Louisiana potatoes at \$2.25-\$2.75. Maine Green Mountains held about steady in large jobbing centers at \$2.10-\$3.35 per 100 pounds. The Chicago carlot market was higher on northern Round Whites at \$3-\$3.10 and firm on Idaho Russets at \$3.50. The season for old potatoes was nearly finished. Prices on all receipts were higher than those of a year ago.

TABB POTATO SERVICE

Market Bulletin No. 214

June 26, 1930

Warm weather and more liberal supplies than expected gave the buying trade the advantage this week, and all markets are weak with still lower prices to be expected. Virginia, Kansas and Missouri are dominating the situation, but the continued movement from North Carolina in the east and Oklahoma in the west has complicated affairs this week. The latter states are now practically through, but with nearly half of next week taken up by holidays, there is almost certain to be some congestion of supplies in the terminals. Virginia is considerably behind its usual schedule of shipments; Maryland is ready to start; and New Jersey and Long Island have excellent crops that are maturing earlier than usual. The Kaw Valley and Missouri crops are showing excellent yields of good quality potatoes, and the movement will be heavy by July 7th. Home grown supplies through Iowa, Illinois and Indiana are reported heavy, and they are already becoming a depressing market factor. There seems to be very ample supplies available for the July Markets, and the trend of prices is still downward.

The shipments this week are running heavier than anticipated and will likely total between 5,500 and 6,000 cars, which is too many for a steady market at present price levels with the weather so warm. Trading is slow and dull in Chicago today, at mostly \$2.00-2.10 on Kansas and Missouri Cobblers, and \$2.25 on Oklahoma Triumphs. North Carolina barrels are mostly around \$4.00 and the best Virginia branded stock at \$4.50. Track holdings have increased to 305 cars, and there is a considerable quantity of poor, off-grade stock of sacked varieties that are cleaning up slowly at low prices. New York City was also weaker today at \$4.00 on the best Virginias and \$3.25-3.50 on Norfolk and North Carolina barrels, with a few at \$3.62½-3.75.

The best Virginia barrels are being held at \$3.25 f. o. b. today,

and we understand a determined effort will be made to stabilize this price for the remainder of the week. North Carolina and Norfolk, Virginia quotations are mostly \$3.00, with the trade in this territory trying to buy for a little less. The general impression with the Chicago trade is that a considerable number of cars have been rolled unsold from the eastern states during the last two or three days, Kaw Valley and Missouri quotations this morning were on basis of \$2.10 delivered Chicago territory, but the demand was very light. Kaw Valley growers received \$1.65 cash track yesterday, but we understand considerably lower prices are being offered for next week's shipment.

The Kaw Valley loading is expected to average from 40 to 50 cars daily for the balance of this week, and our advices do not indicate very heavy shipments until after July 4th, as Kansas is short on selling territory until Oklahoma gets entirely through, thus opening up the southwestern markets for the Kansas Cobblers. Missouri will probably average 50 to 60 cars daily next week, the majority of which will move into Chicago territory. For the week of July 7th, the combined Missouri and Kansas shipments are likely to be somewhat burdensome unless prices get too low to be attractive to the growers.

Trucked in home-grown potatoes are already becoming a depressing market factor from St. Louis across southern Illinois and Indiana, to Indianapolis; and this competition will become heavier and heavier during the next few weeks. Southern Illinois has already shipped 30 cars in a carlot way, which is unprecedented this early in the season. The quality of these southern Illinois potatoes is very good, and they are selling on a par in both St. Louis and Chicago with the Missouri and Oklahoma Cobblers. This home-grown situation in the deficiency states will be an important market factor for months to come in limiting the outlet for shipped in potatoes from the surplus producing states. This will be particularly noticeable during July and August.

The Eastern Shore of Virginia has shipped 2,888 cars to date, and the Norfolk section 1,499 cars; or a total of 4,387 cars from Virginia to last night. If we calculate that the state will ship as many cars as last season (20,705), there will likely be close to 14,000 cars still available on July 1st, which would be more than Virginia has ever shipped during that month. The Eastern Shore of Maryland crop is now starting to move, but the shipments will likely to light until after July 4th.

The New Jersey and Long Island crops are looking exceptionally good, and truck lots are expected to start moving from both sections immediately after July 4th. Carlot shipments will be available in New Jersey during the week of July 14th, if prices are attractive to the growers. Their ideas at the present time are two cents per pound or better. There is one thing certain,

which is that Virginia, Maryland, New Jersey and Long Island cannot all move their crops during July, and the only solution will probably be that prices during the latter part of the month will be such that the more northern growers will willingly wait until August.

Other states that will have early potatoes for July shipment are Washington, starting at the present time; Kentucky, starting about July 10th; Colorado, starting about July 15th; Utah, about July 7th; Idaho, about July 20th; Nebraska, about July 25th; and Minnesota about July 20th. The immediate outlook is none too promising.

LATE CROP PROSPECTS FOR 1930

The only official figures so far available covering the potato acreage in the nineteen late surplus producing states were contained in the government intentions to plant report released late in March, which were listed in detail on Page 2 of our special April 3rd outlook bulletin. This report indicated a total U. S. acreage of 3,483,000 acres, compared with 3,370,000 acres last season and 3,837,000 acres in 1928. The acreage this season is expected to be approximately the same as in 1927, when a crop of 402,741,000 bushels was produced.

The first government estimate will be released on July 10th, and the trade is generally expecting it to indicate a crop of more than 400,000,000 bushels. Based upon information recently received from our crop correspondents, we will discuss each of the important states briefly:

MAINE: Intended acreage reported at 169,000 acres, compared with 172,000 last season; but our reports indicate a slight increase over last year rather than a decrease. Some say 7½% more. Approximately 15% more fertilizer has been used. The crop was planted earlier than for a number of years, and weather conditions have been excellent. Heavy rains during the week of June 15th did some damage, but the crop is coming along fast, and with favorable weather conditions, it is thought that Maine may be shipping potatoes by August 10th if the market warrants.

NEW YORK: Intended acreage reported at 267,000 acres, compared with 270,000 last season. Most of our reports say the acreage this season is approximately the same as last year, taking upstate New York as a whole. The acreage on Long Island was slightly cut, but the condition of the crop was never better at this season of the year. The quality of the seed, soil conditions and moisture supplies all favor excellent yields at the present time. A tendency is reported on the part of the small growers, who do their work by hand, to drop out; but the larger growers increased their acreage correspondingly. We also have

reports indicating that considerably more potatoes had been planted around the cities and villages in gardens and vacant lots than usual. In other words, that the city men have been using some of their spare time to grow food for next winter.

PENNSYLVANIA: Intended acreage reported at 246,000, compared with 234,000 acres harvested last year. This fairly well agrees with the reports that we have received. The crop is said to be coming along fast in the southeastern section, and making a very satisfactory growth. On the whole, Pennsylvania conditions in the north, south and east are reported better than normal.

MICHIGAN: Intended acreage reported at 266,000, compared with 263,000 harvested last fall. Most of our reports indicate a slight increase over last season of from five to ten per cent, taking the state as a whole. Better seed and more fertilizer has been used by most growers. More interest is also being taken in spraying and better cultural methods are being adopted. The crop prospects at present are very favorable for a normal crop of excellent quality.

WISCONSIN: Intended acreage reported at 235,000, compared with 220,000 acres harvested last year. Our reports indicate an increased acreage of about 15%, and the early planting was much heavier than usual. The stands are generally good, fertilizer was used liberally and there has been plenty of moisture all along. Due to the extensive early planting, there should be considerably heavier shipments this season during August, September and early October than usual. Stevens Point reports that garden stuff will be due about July 15th, and that some fields will be ready to start very shortly after August 1st. The important Antigo district should be nearly as early. If present weather conditions continue, the Wisconsin crop this season could easily be 25% larger than last year.

MINNESOTA: Intended acreage reported 312,000, compared with 312,000 acres harvested last season. All of our reports indicate a reduction in the Minnesota acreage this season of probably around 5% to 8%, taking the state as a whole. Some say that the Red River Valley has been reduced 20%, due to the growers selling off their seed last spring. Quite a number of growers all over the state sold their good seed potatoes and planted No. 2's. Growing conditions are generally good all over the state. The early Hennepin County crop is showing up exceptionally good, and will probably be supplying the Twin Cities by July 15th and shipping carlots soon afterward. Some of the Hollandale acreage was drowned out following the heavy rainfall of 4½ inches on June 10th and 2 inches on June 13th. Early reports said that possibly 1,000 acres were completely flooded.

NORTH DAKOTA: Intended acreage reported at 130,000, compared with 145,000 acres last season. Our reports indicate a reduction of from 6% to 10% from last season. Planting was a little late, but weather conditions have been good and the plants were just coming through the ground on June 21st to 23rd. It is too early to say anything about yields, but conditions are very satisfactory.

COLORADO: Intended acreage reported at 85,000, compared with 88,000 last season. Our reports, however, indicate an increase in the acreage this spring, rather than a decrease. Conditions are generally good and our correspondents expect an increased production for the state over last season. The early district around Fruita will start July 15th with about 200 cars; Gilcrest will start July 25th with about 400 cars; and the Fort Morgan district on August 1st with about 200 cars.

IDAHO: Intended acreage reported at 112,000 acres, compared with 102,000 acres harvested last season. The only report returned to us yet from Idaho covers the district north of Idaho Falls, where the acreage has apparently been increased about 10% for the district as a whole. Conditions are normal, with good stands, and should favorable weather prevail until harvest time, the yields would likely be 20% more than last season, due to the early frosts last September which cut down the size of the tubers. We will discuss Idaho in more detail next week after our other correspondents have been heard from.

We have not yet heard from the states farther west. Montana, Utah and Washington are each supposed to show approximately a 5% increase in acreage over last season; Oregon and California about the same; and Nevada 15% increase.

Generally speaking, the crop outlook in practically all of the late producing states is very favorable for increased yields over last season; with the possible exception of Maine, where it hardly seems possible that there could be an improvement. The most important consideration during the next sixty days is the unusual earliness of the crop in the late states, particularly Maine and Wisconsin. Should marketing conditions be favorable during August, a large volume of potatoes could move from these late states. This complicates the August situation, and it hardly seems possible that very high prices can prevail.

TABB POTATO SERVICE.

CORRECTION

Page 138, paragraph 2 of the May 1930 Journal the second line should read as follows: "84 per cent of the variation of the Michigan Potato acreage during the last ten years can be ascribed to changes in the price."

Notes

NEW JERSEY

SEED POTATO CERTIFICATION CONFERENCE

Seed potato certification officials from Canada and most of the eastern certified seed producing states met at the Spencer Perrine Farm, Cranbury, New Jersey, on June 23, to study potato diseases as represented in lots of seed from many different sections of the country. Seed affected with practically all of the virus troubles was furnished for the special disease plots by several states. Opportunity was given each visitor to make readings of the plots; to study in detail the symptoms of all the various diseases and to confer with others relative to certification problems.

The seed certification conferences which have been an annual event in New Jersey for the past several years have been very helpful in promoting higher standards for certification and in securing more uniformity in the methods of inspection used by the various certified seed producing states.

Many of the certification officials attended the Long Island Potato Tour, June 24 and 25.

—H. C. M.

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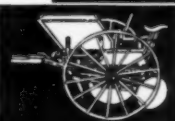


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CANADA

At the present time the total acreage devoted to the production of potatoes is not available, but a survey of the principal commercial producing districts throughout the Dominion indicates that plantings will show an approximate increase of 8 per cent over last year, with practically all districts showing an increase. In Saskatchewan reliable information indicates that planting will be slightly less than last year on account of high price of seed mostly brought in from the Maritime Provinces. Planting was practically complete in all districts by the end of May except in Manitoba where cold, wet weather considerably delayed operations. In British Columbia growth of the early crop has been generally retarded by unfavorable weather and in some instances frost damage has necessitated replanting to later varieties.

Extract Dom. Fruit Branch Veg. report for June.

—J. T.

NEW YORK

SUMMER TOURS AND MEETINGS

Long Island Potato Tour, June 25-27; starting point, Mineola (court house); territory, Nassau and Suffolk Counties.

Seed Improvement Ass'n Field Day, July 14; Ithaca (Bailey Hall), Cornell Experiment Station.

"Blue Tag" Potato Tour, Aug. 4-5; starting point, Cortland

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(court house); territory, Cortland, Onondaga, Cayuga, Madison and Onieda Counties.

Empire State Potato Club Tour, Aug. 19-21; starting point to be announced; territory, Steuben, Wyoming, Genesee, and Monroe Counties.

Those who have attended any one of the first three events know with what success these have been carried out in former years. The first annual tour of the Empire State Potato Club will include some unique features not heretofore offered the New York grower. Field demonstrations, program, entertainment, scenic points, modern potato storages, etc., will occupy the first two days. The last day will be devoted to a potato machinery demonstration at the farm of K. C. Livermore at Honeoye Falls, Monroe County. Many will visit this up-to-date potato and seed farm to learn some of Mr. Livermore's efficient methods of production. All kinds of *modern* and *new ideas* in all kinds of potato planters, diggers, sprayers, dusters, tillage implements, etc., will be demonstrated by many of our leading manufacturers.

COLLEGE INAUGURATES REGIONAL STRAIN TESTS

Beginning this year, the Department of Vegetable Crops will conduct systematic strain tests of seed potatoes for the benefit of both growers and buyers of certified seed in this and other states. These tests will include not only leading strains of certified seed, but also promising new seedlings developed in New York, other states and provinces, and by the U. S. Department of Agriculture. Beginning in 1931, this project will be conducted under a memorandum of agreement with the Bureau of Plant Industry, in order that strains of seed of proven value may be available to potato growers generally throughout the country.

This year 46 strains have been planted at Mattituck, Long Island, on the farm of Dwight Reeve and 34 strains in a similar test on the farm of H. D. Forward at Camillus in Onondaga County. The Long Island test includes mainly Green Mountains and Cobblers, while the one in Onondaga County is composed of Rurals mainly, but also some seedlings, early varieties, and miscellaneous. In choosing material for these tests effort was made to avoid duplication of a given strain from different sources. Strains were submitted, after careful inquiry, from Maine, New Brunswick, Minnesota, Prince Edward Island, Vermont, Wisconsin, Illinois, New York, and the Department of Agriculture. The samples planted represent strains identical with those planted by seed growers this year for next year's seed market. The results, which will be available after harvest, will furnish a basis for buying next year's seed. Also, growers of certified seed will have information

by which to judge whether to change their foundation seed stock. These tests are very carefully laid out, at least five replications of each strain being planted. Records will be taken on season of maturity, habit of growth, virus disease content, marketability of tubers, and yield. The test on Long Island will be visited at the time of the Long Island Potato Tour on June 26th, while the test in Onondaga County will be inspected at the time of the "Blue Tag" Association Tour on August 4th.

The last Legislature and Governor Roosevelt made it possible for the College to increase its service to potato growers. Much credit is due members of the Club and other potato growers for their part in urging these measures.

Dr. Ora Smith, who recently completed research studies on the potato at the University of California, has been asked to become a member of the staff of the Department of Vegetable Crops. He will devote his time, with Dr. E. V. Hardenburg, to the extension and experimental potato programs at the College, beginning August 1st. This will make it possible for potato growers to have full-time services of at least one man throughout the year.

The potato grading bill failed again in the Legislature. Evidently, a majority of growers are not yet sufficiently confident of the value of such legislation to urge its passage. This seems sufficient reason why we should so organize our state potato program as to insure continued improvement in the quality of the crop we market.

Doctor Fernow, in charge of Seed Inspection, reports that there will be no appreciable change in the acreage submitted for inspection this year. The following will act as seed inspectors during the summer months: K. H. Fernow, R. L. Payne, S. A. E. McCallan, and L. M. Black. Mr. Black comes from British Columbia where he has inspected potatoes for two years for the Dominion Government.

—E. V. HARDENBURG.

OREGON

The start toward the first attempt ever made in the west to fit the acreage of a crop to the market needs over a wide area was made Saturday, March 29, at Boise, Idaho, when the representatives of Washington, Idaho, and Oregon decided to employ jointly a potato field man to coordinate the work the three states are doing in making economic information available to potato growers. Boise was decided upon as the headquarters for this man.

W. A. Sherman, chief of the fruit and vegetable division of the Bureau of Agricultural Economics presented the plan and gave the group an idea of how it might be expected to work out.

One of the Idaho dealers expressed the general sentiment of many of those present by saying that in the face of repeated warnings, the growers of his section seemed determined to plant about 20% more potatoes this year, and he doubted if any power on earth could stop them. Mr. Sherman asked, "Do they know what the Klamath, Yakima, and Colorado growers intend to do? If a man were available to go into each neighborhood and tell them these things, I think it would make them pause. And, if every banker in every potato growing section knew that if he financed potato growing under some conditions, he would be apt to have to wait two or three years for his money, I think bankers would be inclined to be conservative. Some dealers put out seed on a returnable basis, and in certain years if these people realized that their probable return would be less than the value of the seed, they would be apt to go slow."

Mr. Sherman said that his department felt sure enough of the success of the plan to be willing to contribute \$1000 per year toward it and that the Federal Office of Cooperative Extension Work would contribute \$2000. The directors of Extension Work in Washington, and Idaho, each promised aid and Oregon indicated willingness to help if funds were available. Telegrams were read from the extension directors of Montana, Colorado, Wyoming, Nevada, and California, all of which expressed the liveliest of interest in the experiment and indicated that the writers would be in favor of extending the work, if it developed satisfactorily.

It was pointed out that such a move was really a logical extension of the work the various states are already doing. The extension service in each state is publishing outlook reports for each crop, holding meetings with growers, and explaining the outlook, but this is not having the effect it should have. The plan was first tried out in the South Atlantic states, and seems to be getting results. So the Pacific Northwest will be the second district to try it.

A committee is now at work sifting the qualifications of the various persons mentioned as suitable for the field secretary position. The directors of extension of the three states met at Pendleton April 1 to make the final plans.

The Boise meeting was attended by a group of Idaho growers and dealers, and after all questions were cleared up, they unanimously approved the plan. The extension services of the three states were represented by Dean E. J. Iddings of Idaho; Acting Director R. W. Turner, of Washington, and E. R. Jackman, of Oregon.

It seemed to be the opinion of the group that the whole thing was an experiment, but one worthy of trial, and that if it succeeded there should be no reason why it would not work out

with other crops, as onions, and cauliflower, and in that case give a measure of security to at least some branches of agriculture which have never before had it.

—E. R. JACKMAN.

VIRGINIA-MARYLAND POTATO TOUR

The Virginia-Maryland Potato Tour held in Accomac County, Virginia, June 19, and in Worcester County, Maryland, June 20, was of exceptional interest to Virginia and Maryland potato growers as well as to representatives from Canada and several of the certified seed producing states.

In Virginia the tour was divided into two sections. One section visited certified seed and fertilizer demonstrations in the Oak Hall and Mappsville district, while the other section examined demonstrations and experimental plots in the districts of Exmore, Painter, and Pungoteague. Both sections of the tour met at Onley for dinner and for the afternoon program which was attended by some 500 people.

After the program, the visitors had an opportunity to study in detail the work being done at the Onley Experiment Station in the use of commercial fertilizers and certified seed from various sources. This work is conducted by the Virginia Truck Crop Experiment Station, and the results secured from the experiments are directly applicable to Accomac County potato growers.

The tour in Worcester County, Maryland, demonstrated very forcibly the value of using certified seed in increasing acre yields and in producing potatoes economically. Plots planted with uncertified seed averaged 183 bushels per acre while the lowest yielding source of certified seed produced 298 bushels per acre.

Certified seed from eight seed producing states and three provinces of Canada were grown on three different types of soil in special plots. Percentage of stand, vigor of plant, and disease counts, were made by officials of the Maryland Experiment Station. An outstanding feature of these tests was the general uniformity that existed among the various lots of certified seed.

It may be of interest to many readers of the Journal to know that Worcester County, Maryland, is producing certified seed potatoes. In 1929 they had 177 growers who produced approximately 40,000 bushels of certified seed. The variety being the Irish Cobbler with a limited amount of McCormick.

Dr. R. A. Jehle of the Maryland Experiment Station was quite optimistic over the possibilities of producing certified seed stock in the eastern shore district. He cited that there was an excellent opportunity to keep seed stock practically

free from disease through careful tuber index work. By tuber indexing seed early in the spring as soon as the weather permits planting the tubers outdoors, and then by selecting only those stocks that prove free from disease, for planting in the latter part of the summer, generally about the tenth of August, it is possible to produce high quality seed.

The fertilizer experimental plots at the Snowhill Experimental Farm were of special interest to the growers and others on the tour. In one experiment, ammonia from various sources was compared, and it was found that generally the best results were secured where practically 70 to 80 per cent of the ammonia came from inorganic sources and 20 to 30 per cent from organic material.

In a fertilizer rate of application experiment, it was noted that an increase in yield and an improvement in quality of potatoes was secured with each heavier rate of application. The application varying from 1000 to 3000 pounds per acre. The analysis for the fertilizer used in many of the experiments was 7 per cent ammonia, 6 per cent phosphoric acid, 5 per cent potash. At all rates of applications above 1000 pounds the application of 75 per cent of the fertilizer at planting time and 25 per cent at the first cultivation was the more advantageous method.

The fertilizer experimental work being conducted at the Snowhill farm is under the direction of the Bureau of Chemistry and Soils of the U. S. Department of Agriculture.

—H. C. M.

Review of Recent Literature

Metzger, C. H. Potato Seed Selection. Col. Agr. Exp. Sta. Circ. 60, May 1929.

The importance of good seed is stressed and the grower's attention is called to the injurious effect of planting diseased seed. The two types of seed borne diseases are briefly described and the relative merits of "Hill Selection"; "Mass Selection" and the Tuber Unit Methods of seed improvement are discussed. A five-year selection seed improvement program is recommended.

—W. STUART.

Metzger, C. H. Ideal Types for Colorado Standard Potato Varieties. Col. Agr. Exp. Sta. Bul. 359, Feb. 1930. The bulletin contains 16 figures illustrating eight standard Colorado Commercial varieties. The reader is still further assisted in acquiring a good general knowledge of these varieties by a description of the tuber-shape and skin characters and the size, depth, color and number of eyes. Other subjects discussed are "Production Tendencies"; "Definitions of Quality and Type"; "Effects of Disease and of Environmental Factors"; "Picking the Show Samples" and judging with the score card.

—W. STUART.



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